

#### ABSTRACT OF THE DISCLOSURE

A semiconductor element has an upper wiring layer and a lower wiring layer. These layers communicate with each other via a via-hole. The via-hole is filled with W. Before W is filled in the via-hole by a CVD process to connect the lower wiring layer to the upper wiring layer, a cleaning gas is supplied into the via-hole to remove particular substances, which would otherwise result in high resistance. Subsequent to the cleaning step, the W portion is formed in the via-hole. Since the high resistance substances are removed from the via-hole before the formation of the W portion, the semiconductor element (or the via-hole) has a low resistance and high reliability.